

## Wireless MEMs BioSensor, Phase I

Completed Technology Project (2004 - 2004)



## Project Introduction

Crossfield is proposing to develop a low cost, single chip plant bio-monitor using an embedded MEMs based infrared (IR) spectroscopy gas sensor for carbon dioxide and oxygen sensing, a temperature sensor, a visible light sensor, and a MEMs based soil moisture sensor. In addition, the signal conditioning, A/D converter, and processor will be implemented on the same monolithic chip, providing NASA with a smart biosensor chip for monitoring and data logging plant life environmental stress. A second, commercially available chip will provide a wireless interconnect to a remote monitoring station, enabling any suitably equipped computer, such as a laptop or a fixed display station to monitor the condition of a networked array of such sensors. The MEMs sensors are innovative Crossfield designs and the small, two-chip Wireless BioSensor is sufficiently low power to enable indefinite life time by energy scavenging from the environment. Under Phase I, the system will be demonstrated using analysis, simulation, and a demonstration breadboard of key elements. The monolithic sensor will be fully developed under a Phase II effort.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**

Ames Research Center (ARC)

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Crossfield Technology LLC	Supporting Organization	Industry	Orlando, Florida

## Primary U.S. Work Locations

California	Florida
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## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Dennis D Ferguson

## Technology Areas

**Primary:**

- TX06 Human Health, Life Support, and Habitation Systems
  - └ TX06.3 Human Health and Performance
    - └ TX06.3.4 Contact-less / Wearable Human Health and Performance Monitoring